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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,085	11/03/2003	Tze-chiang Chen	YOR920030586US1 (17201)	2805
23389 7590 08/09/2005 SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA SUITE 300 GARDEN CITY, NY 11530			EXAMINER NGUYEN, CUONG QUANG	
			ART UNIT 2811	PAPER NUMBER

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/700,085	CHEN ET AL.	
	Examiner	Art Unit	
	Cuong Q. Nguyen	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) 2,8-10,15-28 and 33-68 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,11-14,29-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____                                                 |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____                                                              | 6) <input type="checkbox"/> Other: ____                                     |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-7, 11-14 and 29-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support for the new limitation "a bonding interface is present between the substrate and the buried insulator layer" in claim 1 in elected Embodiment of Fig.1.

### **Claim Rejections - 35 USC § 102**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 3, 4, 5, 11, 12 and 14 are rejected under 35 U.S.C. 102(a) as being anticipated by Bae et al. (US 6,633,066).

Regarding claims 1, 3, 4, 11, 12, Bae et al. discloses a semiconductor wafer comprising: a silicon (Si) substrate (20) (col.2 lines 36-40) performed silicon-on-insulators; a buried insulator layer (22) located on an upper surface of the substrate; an intermediate adhesion layer (18, an epitaxial silicon layer) located on an upper surface the buried insulator layer; and a Ge-containing layer (16) located on an upper surface of the intermediate adhesion layer, wherein said Ge-containing layer is attached to the buried insulator layer by the intermediate adhesion layer. Fig.4E.

It is noted that a bonding interface is inherently present between the substrate and the buried insulating layer.

Regarding claim 5, as shown in Bae et al.'s Fig.4E, that the substrate comprises a combination of strained and unstrained layers.

Regarding claim 14, Bae et al. teaches that the Ge-containing layer has a thickness of 80 nm (col.7 lines 31-32).

Claims 1, 3, 4, 6, 7, 11, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Chu et al. (US 5,906,951).

Chu et al. discloses a semiconductor wafer comprising: a silicon substrate (26) performed silicon-on-insulators; a buried insulator layer (28, a non-crystalline silicon dioxide layer) located on an upper surface of the substrate; an intermediate adhesion

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layer (19, an epitaxial silicon layer) located on an upper surface the buried insulator layer; and a Ge-containing layer (18) located on an upper surface of the intermediate adhesion layer, wherein said Ge-containing layer is attached to the buried insulator layer by the intermediate adhesion layer. Fig.4.

It is noted that a bonding interface is inherently present between the substrate and the buried insulating layer.

Claims 1, 3, 4, 6, 7, 11, 12, 13 and 29-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Fitzgerald (US 6,677,655).

Regarding claims 1, 3, 4, 6, 7, 11, 12, 13, Fitzgerald discloses a semiconductor wafer comprising: a silicon substrate (308) performed silicon-on-insulators; a buried insulator layer (310, a non-crystalline silicon dioxide layer) located on an upper surface of the substrate; an intermediate adhesion layer (306, an epitaxial silicon layer) located on an upper surface the buried insulator layer; and a pure Ge layer (302) located on an upper surface of the intermediate adhesion layer, wherein said Ge-containing layer is attached to the buried insulator layer by the intermediate adhesion layer. Fig.3D.

It is noted that a bonding interface is inherently present between the substrate and the buried insulating layer.

Regarding claims 29-32, Fitzgerald teach that a monolithic optoelectronic integrated circuit including a si-containing circuit is formed on the semiconductor wafer (col.1 lines 9-23) lemst one device or circuit located thereon. Fitzgerald further teaches that the device is a Ge-photodetector (col.7 lines 30-40).

### **Conclusion**

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

3. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 872-9306. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to CUONG Q NGUYEN whose telephone number is (571) 272-1661. The Examiner is in the Office generally between the hours of 6:30 AM to 5:00 PM (Eastern Standard Time) Monday through Thursday.

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4. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Eddie Lee who can be reached on (571) 272-1732.

5. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center Receptionists whose telephone number is 308-0956.

A handwritten signature in black ink, appearing to read 'Cuong Nguyen', is written over the printed name.

Cuong Nguyen

Primary examiner

8/3/05